



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/625,094	07/25/2000	Frederick M. Discenzo	00RE089	6257

7590 01/05/2004

Allen-Bradley Company Inc
Attention John J Horn
Patent Dept 704P Floor 8 T-29
1201 South Second Street
Milwaukee, WI 53204

EXAMINER

CONNOLLY, PATRICK J

ART UNIT	PAPER NUMBER
----------	--------------

2877

DATE MAILED: 01/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/625,094

Applicant(s)

DISCENZO, FREDERICK M.

Examiner

Patrick Connolly

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) 22,23 and 28-36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21,24-27 and 37-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election of claims 1-21, 24-27 and 37-43 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. This application contains claims 22, 23 and 28-36 drawn to an invention nonelected with traverse. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-12, 14-21, and 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dunphy et al (US 5,399,854) in view of Kersey et al (5,361,130) and Thomas et al (4,460,893).

Dunphy et al (Dunphy hereinafter) show an embedded optical sensor capable of strain and temperature measurement comprising:

a least one optical fiber (21) embedded in a sample to be measured, the at least one optical fiber being adapted to transmit light from a light source; and

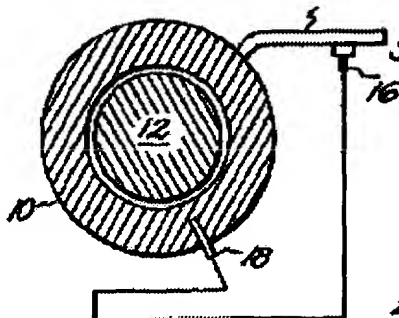
Art Unit: 2877

an interferometric system (28) operatively couple to the optical fiber and a processor;
wherein the interferometer system provides information relating to at least one condition of the bearing , and a state of the at least one condition of the sample based on the information is determined.

Dunphy does not expressly show a processor and does not show that the sample being measured is a bearing.

Kersey et al shows a fiber optic sensing system having a processor. At the time of the invention, one of ordinary skill in the art would have used a processor with Dunphy in order to count and convert the fringe signals from the sensors into the temperature that is being indicated by the sensor.

As for the bearing, Thomas et al (Thomas hereinafter) shows a sensor (18) embedded in a bearing (10) to monitor the bearing temperature wherein in the sensor (18) is embedded parallel to the direction of wear of the bearing (10).



At the time of the invention, one of ordinary skill in the art would have replaced the sensor of Thomas with the fiber optic sensor of Dunphy in order to have a simpler sensor having a wider range of temperature measurement, and also measures temperature more accurately..

Art Unit: 2877

As for claims 2, 10, 16 Thomas show that monitoring the temperature of the bearing indicates the rate of wear of the bearing (Abstract).

As for claims 4 and 5, Dunphy shows that a reference beam and a measurement beam is created and that an interference beam is created by the reflected reference and measurement beam.

As for claims 8 and 9, none of the cited references show that the bearing is a ball bearing, hydrodynamic, double row ball, and thrust bearings however, those types of bearings are notoriously well known. At the time of the invention, one of ordinary skill in the art would have used sensors in a ball bearings to monitor the condition of the bearings.

As for claim 15, please see Figure 7 of Kersey.

As for claim 16, none of the references show that the sensor end of the fiber is flush with a contacting surface of the bearing, however, Thomas teaches that the sensor should be placed as close as possible to the load bearing point, therefore one of ordinary skill in the art would have been motivated to place the sensor flush with the contacting surface of the bearing since that point is a load bearing point in order to obtain the most accurate measurement of the temperature of the load bearing point.

3. Claims 13, 27, 37-43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dunphy, Kersey and Thomas as applied to claims 1-12, 14-21, and 24-27 above, and further in view of Ide (5,382,097).

Art Unit: 2877

Dunphy, Kersey and Thomas do not show an actuator.

Ide shows a smart bearing comprising an actuator. At the time of the invention, one of ordinary skill in the art would have modified Dunphy, Kersey and Thomas with an actuator of Ide in order to maintain proper bearing support while monitoring the pressure environment of the sensor(column 17, lines 47+).

Papers related to this application may be submitted to Technology Center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the PTO Fax Center located in CP4-4C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Center numbers are 703-872-9306 for regular communications and for After Final communications

If the Applicant wishes to send a Fax dealing with either a Proposed Amendment or for discussion for a phone interview then the fax should:

- a) Contain either the statement "DRAFT" or "PROPOSED AMENDMENT" on the Fax Cover Sheet; and
- b) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Connelly whose telephone number is (703) 305-0538.

Art Unit: 2877

The examiner can normally be reached on M-Th. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on 703-308-4881.



Patrick Connolly
Patent Examiner
Art Unit 2877

December 17, 2003/ahl



Michael P. Staffira
Primary Patent Examiner
Technology Center 2800